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**1: Nucleoside-Diphosphate Kinase**

Lin

An enzyme that is found in mitochondria and in the soluble cytoplasm of cells. It catalyzes reversible reactions of a nucleoside triphosphate, e.g., ATP, with nucleoside diphosphate, e.g., UDP, to form ADP and UTP. Many nucleoside diphosphates can act as acceptor, while many ribo- and deoxynucleoside triphosphates can act as donor. EC 2.7.4.6.  
Year introduced: 1994

Subheadings: This list includes those paired at least once with this heading in MEDLINE and may not reflect current rules for allowable combinations.

☐ analysis ☐ antagonists and inhibitors ☐ biosynthesis ☐ blood  
☐ cerebrospinal fluid ☐ chemistry ☐ classification ☐ deficiency ☐ drug effects  
☐ genetics ☐ history ☐ immunology ☐ isolation and purification  
☐ metabolism ☐ pharmacology ☐ physiology ☐ radiation effects ☐ secretion  
☐ ultrastructure

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Registry Number: EC 2.7.4.6

Entry Terms:

- Kinase, Nucleoside-Diphosphate
- Nucleoside Diphosphate Kinase
- Deoxynucleoside Diphosphate Kinases
- Diphosphate Kinases, Deoxynucleoside
- Kinases, Deoxynucleoside Diphosphate

- Nucleoside Diphosphokinases
- Diphosphokinases, Nucleoside
- Nucleoside-Diphosphate Kinases
- Kinases, Nucleoside-Diphosphate
- Nucleoside Diphosphate Kinases
- GDP Kinase
- Kinase, GDP

Previous Indexing:

- [Nucleotides \(1966-1976\)](#)
- [Phosphotransferases \(1966-1973\)](#)
- [Phosphotransferases, ATP \(1974-1976\)](#)

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**Nucleoside-Diphosphate  
Kinase**

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**1: Myxococcus xanthus**

Lin

A species of gliding bacteria found on soil as well as in surface fresh water a coastal seawater.

Year introduced: 1992

**Subheadings:** This list includes those paired at least once with this heading in MEDLINE and may not reflect current rules for allowable combinations.

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☐ genetics ☐ growth and development ☐ immunology ☐ isolation and purification  
☐ metabolism ☐ pathogenicity ☐ physiology ☐ radiation effects  
☐ ultrastructure ☐ virology

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- [Bacteria \(1966-1973\)](#)
- [Myxococcales \(1974-1991\)](#)

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**Myxococcus xanthus**

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- To combine searches use #search, e.g., #2 AND #3 or click query # for more options.

Search	Most Recent Queries	Time	Result
<u>#13</u>	Search 112 AND (#12 OR #11 OR #10 OR #8)	07:06:25	<u>1</u>
<u>#12</u>	Search #11 NOT #8	07:05:40	<u>2</u>
<u>#11</u>	Search #10 AND xanthus	07:05:18	<u>8</u>
<u>#10</u>	Related Articles for PubMed (Select 11305926)	07:04:51	<u>403</u>
<u>#8</u>	Search #3 AND #7	07:03:53	<u>8</u>
<u>#7</u>	Search "Nucleoside-Diphosphate Kinase"[Mesh]	07:03:03	<u>1366</u>
<u>#3</u>	Search "Myxococcus xanthus"[Mesh]	07:01:44	<u>484</u>

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## IUBMB Enzyme Nomenclature

**EC 2.7.4.6**

**Accepted name:** nucleoside-diphosphate kinase

**Reaction:** ATP + nucleoside diphosphate = ADP + nucleoside triphosphate

**Other names:** nucleoside 5'-diphosphate kinase; nucleoside diphosphate (UDP) kinase; nucleoside diphosphokinase; nucleotide phosphate kinase; UDP kinase; uridine diphosphate kinase

**Systematic name:** ATP:nucleoside-diphosphate phosphotransferase

**Comments:** Many nucleoside diphosphates can act as acceptors, while many ribo- and deoxyribonucleoside triphosphates can act as donors.

**Links to other databases:** [BRENDA](#), [EXPASY](#), [GTD](#), [KEGG](#), [ERGO](#), [PDB](#), [CAS](#) registry number: 9026-51-1

**References:**

1. Berg, P. and Joklik, W.K. Enzymatic phosphorylation of nucleoside diphosphates. *J. Biol. Chem.* 210 (1954) 657-672.
2. Gibson, D.M., Ayengar, P. and Sanadi, D.R. Transphosphorylations between nucleoside phosphates. *Biochim. Biophys. Acta* 21 (1956) 86-91.
3. Kirkland, R.J.A. and Turner, J.F. Nucleoside diphosphokinase of pea seeds. *Biochem. J.* 72 (1959) 716-720.
4. Krebs, H.A. and Hems, R. Some reactions of adenosine and inosine phosphates in animal tissues. *Biochim. Biophys. Acta* 12 (1953) 172-180.
5. Nakamura, H. and Sugino, Y. Metabolism of deoxyribonucleotides. 3. Purification and some properties of nucleoside diphosphokinase of calf thymus. *J. Biol. Chem.* 241 (1966) 4917-4922. [PMID: 5925862]
6. Ratliff, R.L., Weaver, R.H., Lardy, H.A. and Kuby, S.A. Nucleoside triphosphate-nucleoside diphosphate transphosphorylase (nucleoside diphosphokinase). I. Isolation of the crystalline enzyme from brewers' yeast. *J. Biol. Chem.* 239 (1964) 301-309.

[EC 2.7.4.6 created 1961]

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## EAST Search History

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S1	2	"6746849".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2007/07/02 07:08
S2	2	"6545127".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/09/20 13:06
S3	10107	brune.in. or corrie.in. or webb.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/09/28 15:17
S9	379	(ndpk or (nucleoside adj diphosphate adj kinase))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/09/28 15:34
S10	12	S9 and S3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/09/28 15:34
S11	2	S9 and idcc	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/09/28 15:35
S12	11	S4 and fluorescen\$	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/09/28 15:35
S13	10714	brune.in. OR corrie.in. OR webb.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2007/07/02 07:10
S14	12	S13 AND (NDPK OR "nucleoside diphosphate kinase" OR xanthus)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2007/07/02 07:11
S15	478	NDPK OR "nucleoside diphosphate kinase" OR "nucleoside 5'-diphosphate kinase" OR "nucleoside diphosphate (UDP) kinase" OR "nucleoside diphosphokinase" OR "nucleotide phosphate kinase" OR "UDP kinase" OR "uridine diphosphate kinase" OR "Nucleoside-Diphosphate Kinase" OR "Deoxynucleoside Diphosphate Kinase" OR "GDP Kinase"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2007/07/02 07:15



## EAST Search History

S16	14	S15 and xanthus	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2007/07/02 07:15
S17	8	S16 and ("112" OR Asp112 OR D112)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2007/07/02 07:16

Search History for 10/779,718

(FILE 'HOME' ENTERED AT 08:39:59 ON 02 JUL 2007)

FILE 'REGISTRY' ENTERED AT 08:40:27 ON 02 JUL 2007

L1 1 S 9026-51-1/RN

FILE 'REGISTRY' ENTERED AT 08:41:04 ON 02 JUL 2007

FILE 'CAPLUS' ENTERED AT 08:41:08 ON 02 JUL 2007

L2 E BRUNE M H/AU 25  
2 S (E1 OR E8 OR E9 OR E10) AND (L1 OR NDPK OR "NUCLEOSIDE DIPHOS  
E CORRIE J E/AU 25  
L3 2 S (E4 OR E8 OR E10 OR E11) AND (L1 OR NDPK OR "NUCLEOSIDE DIPHO  
E WEBB M R/AU 25  
L4 2 S (E3 OR E35 OR E36) AND (L1 OR NDPK OR "NUCLEOSIDE DIPHOSPHATE  
L5 2 S L2 OR L3 OR L4

FILE 'MEDLINE, AGRICOLA, CAPLUS, BIOSIS, EMBASE, WPIDS, SCISEARCH'  
ENTERED AT 08:44:08 ON 02 JUL 2007

L6 6832 S L1 OR NDPK OR "NUCLEOSIDE DIPHOSPHATE KINASE" OR "NUCLEOSIDE  
L7 607 S "NUCLEOSIDE DIPHOSPHOKINASE" OR "NUCLEOTIDE PHOSPHATE KINASE  
L8 6145 S "NUCLEOSIDE-DIPHOSPHATE KINASE" OR "DEOXYNUCLEOSIDE DIPHOSPHA  
L9 7112 S L6 OR L7 OR L8  
L10 149 S L9 AND XANTHUS  
L11 1 S L10 AND (ASP112? OR D112? OR ASP-112 OR ASPARTATE-112)  
L12 0 S L11 NOT L5  
L13 45 S L10 AND (MUTANT OR VARIANT OR MUTAGENESIS OR MUTATION OR SUBS  
L14 31 DUP REM L13 (14 DUPLICATES REMOVED)  
L15 0 S L14 AND "112"

=>

*For L6, L7, L8 - used all synonyms listed in MeSH  
and IUBMB (see attached printouts)*